CITY OF WENDELL (PWS 5240028)
SOURCE WATER ASSESSMENT FINAL REPORT

April 25, 2003

State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the City of Wendell, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Wendell (PWS #5240028) water system consists of four wells. Boise St. Well and Lewiston St. Well are the primary sources of water for the system. The Gooding St. Well and Monroc Well act as backups. The system currently serves approximately 3000 people through 900 connections.

Final susceptibility scores are derived from system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). The different wells are subject to various contamination settings, therefore separate scores are given for each type of contaminant.

In terms of total susceptibility, all four wells rated high for IOCs, VOCs, SOCs, and microbial contaminants. With the exception of the Monroc Well which rated moderate for system construction, each well rated high for hydrologic sensitivity and system construction. Each well rated moderate for IOC, VOC, SOC, and microbial Land Use scores, except the Lewiston St. Well which rated high for IOCs, VOCs, and SOCs.

No SOCs, VOC, or microbials have ever been detected in any of the wells. The IOCs nitrate, chromium, cyanide, fluoride, sodium, arsenic, barium, selenium, cadmium, and nickel have been detected in tested water, however concentrations of each have been significantly below maximum contaminant levels (MCLs). Despite existing in a region of high nitrogen fertilizer use, high herbicide use, and high ag-chemical use, nitrate has only been detected in concentrations less than 2 parts per million (ppm), significantly below the MCL of 10 ppm.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific purpose.

For the City of Wendell, drinking water protection activities should first focus on maintaining the requirements of the 2000 Sanitary Survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). As Monroc Well is located relatively close to industrial activity, contamination spills should be monitored very carefully. In addition, due to airborne potential contaminants in general and especially near industrial activity, the open casing on Monroc Well should be covered with a tight sealing lid when the pump is not in place. Any spills from the potential contaminant sources listed in Tables 2 - 5 of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area should be implemented. Measures should be taken to maintain low levels of disinfection byproducts. No chemicals should be stored or applied within the 50-foot radius of the wellheads. As most of the designated areas are outside the direct jurisdiction of City of Wendell, partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineation, therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF WENDELL, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Wendell (PWS #5240028) water system consists of four wells. Boise St. Well and Lewiston St. Well are the primary sources of water for the system. The Gooding St. Well and Monroc Well act as backups. The system currently serves approximately 3000 people through 900 connections.

No SOCs, VOC, or microbials have ever been detected in any of the wells. The IOCs nitrate, chromium, cyanide, fluoride, sodium, arsenic, barium, selenium, cadmium, and nickel have been detected in tested water, however concentrations of each have been significantly below MCLs. Despite existing in a region of high nitrogen fertilizer use, high herbicide use, and high ag-chemical use, nitrate has only been detected in concentrations less than 2 ppm, significantly below the MCL of 10 ppm.

Defining the Zones of Contribution – Delineation

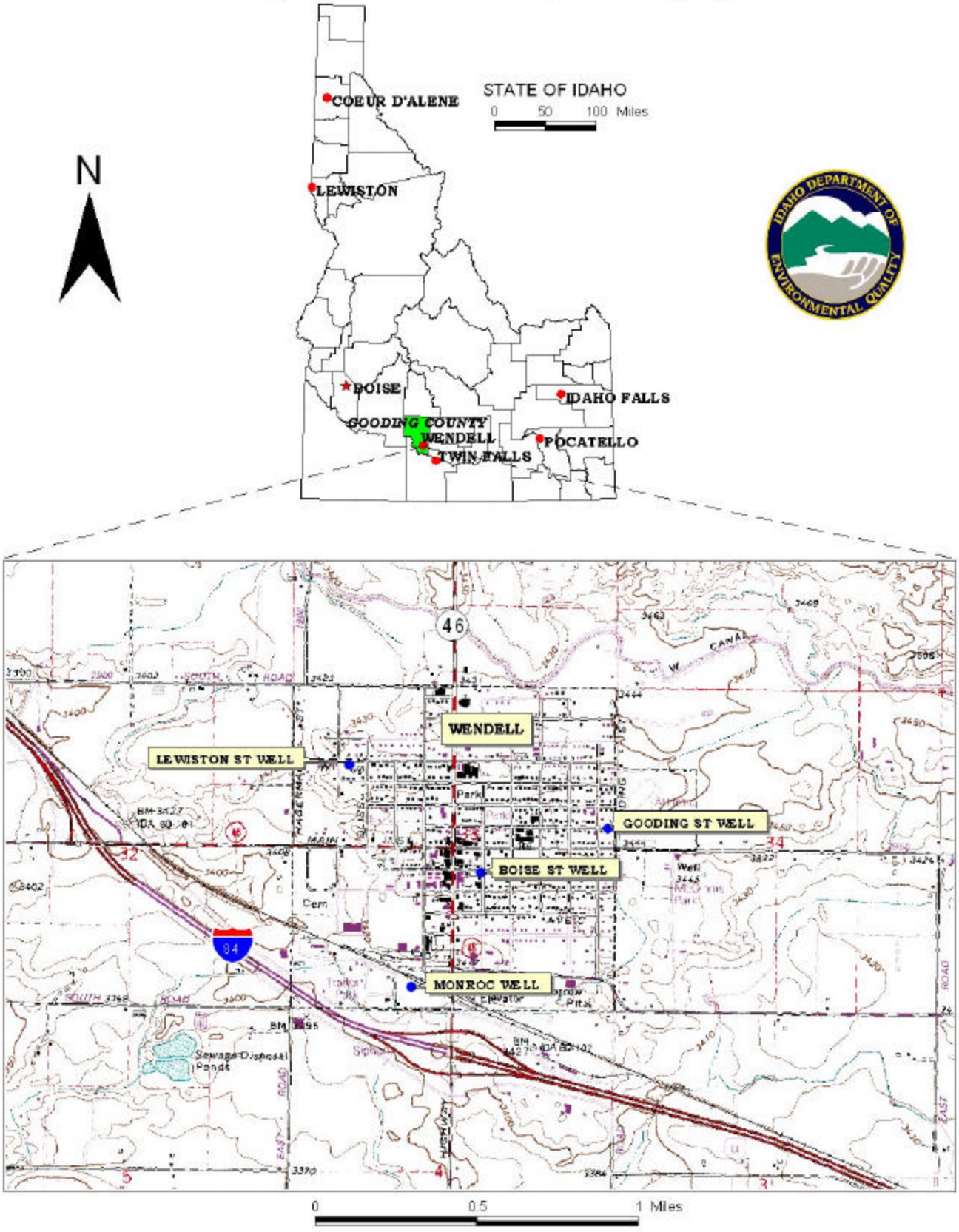
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International (WGI) used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) time-of-travel (TOT) zones for water associated with the Southwest Eastern Snake River Plain (SW ESRP) aquifer. The computer model used site-specific data, assimilated by DEQ and WGI from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The ESRP is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are filled primarily with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with sedimentary rocks along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally because of interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center. Models of the regional aquifer have used values ranging from 200 to 3,000 feet to represent aquifer thickness (Cosgrove et al., 1999, p. 15).

Regional ground-water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 ft/mile and average 12 ft/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations.

FIGURE 1. Geographic Location of the City of Wendell



The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

The Southwest Margin of the ESRP hydrologic province is the regional aquifer's primary discharge area. Interpretation of well logs indicates that a 1- to 23-foot-thick layer of sediment overlies the fractured basalt aquifer in Jerome County, and that an 8- to 410-foot-thick layer of sediment overlies the same aquifer in southern Minidoka and Power Counties. Published geologic maps of the Snake River Plain (Whitehead 1992, Plates 1 and 5) indicate there is 100 to 500 feet of Quaternary to Tertiary aged compacted to poorly consolidated sediments located in the Heyburn area (north of the Snake River near Burley). The saturated thickness of the regional basalt aquifer for the Southwest Margin is estimated to range from less than 500 feet near the Snake River to 1,500 feet near Minidoka.

A published water table map of the Kimberly to Bliss region of the aquifer (Moreland, 1976, p. 5) indicates that the ground-water flow direction in the Southwest Margin is similar to that depicted at the regional scale (e.g., Garabedian, 1992, Plate 4).

Annual average precipitation for the period 1951 to 1980 is 9.6 inches in both Twin Falls and Burley (Kjelstrom, 1995, p. 3). The estimated recharge from precipitation in the Southwest Margin ranges from less than 0.5 inch to more than 2 in./yr (Garabedian, 1992, p. 20). Kjelstrom (1995, p. 13) reports an annual river loss of 110,000 acre-feet to the aquifer for the 34.8-mile Minidoka-to-Milner reach of the Snake River. River gains of 210,000 acre-feet for the 21.5-mile Milner-to-Kimberly reach, and 880,000 acre-feet for the 20.4-mile Kimberly-to-Buhl reach are reported for the same period.

Capture Zone Modeling

Originally, capture zone delineations for all of the City of Wendell sources were modeled using the MODFLOW numerical groundwater flow model and the MODPATH particle tracking model. The MODFLOW model used for the other sources is only intended to simulate the uppermost-saturated 200 feet of the aquifer.

Additional work was performed to extend the original time of travel capture zones developed for the City of Wendell public drinking water sources to the full 3, 6, and 10 year boundaries. The boundaries of the original MODFLOW and WHAEM models that were used (described above) did not permit this. An evaluation was conducted to determine how to most efficiently extend the capture zones. It was determined that rather than expend significant effort in building and calibrating new models that would take in the larger model domain required for the longer capture zones that were anticipated it was decided to use an existing model that met these needs.

The model used is the United States Geological Survey (USGS) MODFLOW model of the Eastern Snake River Plain developed by Garabedian (1992). This model has been well tested and calibrated to aquifer water levels. The model input files were obtained from Dave Clark of the Boise USGS Office. The primary modification of the original Garabedian model provided by Mr. Clark was that the discritization of the model grid had been increased. The original Garabedian model contained grid blocks that were four miles square. The finer grid used in this modeling contained grid blocks one mile square in size.

Wells corresponding to the sources being modeled for each city were placed in grid blocks corresponding as closely as possible to their location. The original input values for pumping rates and pumping scenarios were also used. For the City of Hagerman Big Spring source no pumping was employed. The pathlines generated by MODPATH for each well location were modified slightly to reflect the actual measured groundwater potentiometric surface for the Eastern Snake Plain aquifer shown in Figure 6. In addition, the widths of capture zones were modified to acknowledge 1) the constraints of using a numerical model with a grid block size that is coarser than ideal for looking at pumping of individual wells and 2) the uncertainty in flow paths at the large distances (up to 30 miles) from the pumping wells seen for the longer time of travel capture zones.

The final amended capture zones for the City of Wendell sources are illustrated in Figures 2 through 5. The general shape and direction of the delineations is similar to those originally developed. A major difference in the amended delineations is the shortened lengths, for a given time period, of the new capture zone delineations. This change is a result of the lower hydraulic conductivity values employed in the USGS model versus the earlier DEQ model. For a given pumping rate this results in shorter but wider capture zones. In a fast moving, productive aquifer such as the Eastern Snake Plain calculated capture zone widths for wells pumping at the relatively low rates assumed for these sources are very small (several hundred feet at most). Therefore, the capture zone widths as delineated are likely very conservative but reflect the uncertainty inherent in attempting to model a complex groundwater flow system such as the Eastern Snake Plain.

The delineated source water assessment areas for the City of Wendell can best be described as corridors approximately 25 miles long which extend in an easterly direction (Figure 2 through Figure 6). The actual data used by DEQ in determining the source water assessment delineation areas is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ, City of Wendell, and from available databases.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in August and September of 2002. This involved identifying and documenting potential contaminant sources within the City of Wendell Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ.

The delineation of each well contains between 12 and 33 potential contaminant sources (See Table 2 through Table 5). These potential contaminant sources include underground storage tanks (USTs), Leaking Underground Storage Tanks (LUSTs), dairies, injection wells, recharge points, Superfund Amendments Reauthorization Act (SARA) sites, recharge points, gravel pits, and various businesses. In addition, the transportation corridors, Interstate 84, Highway 45, and the Union Pacific Railroad intersect at least one of the delineations. If an accidental spill occurred in one of these sources, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system.

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity rated high for all four wells (Table 2). Soils surrounding the wells are described as moderately- to well-drained by the National Resource Conservation Service (NRCS). Scores were also increased because composition of the vadose zones are unknown, and it is also unknown if aquitards exist above the producing zones of the wells. In addition, the 2000 Sanitary Survey noted that water table depths were less than 300 feet in each of the wells.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The Boise Street Well rated moderate for construction. The well was constructed in 1969 to a depth of 361 feet bgs with a 12-inch casing of unknown thickness. The water table is at 160 feet bgs and the casing is properly vented, although the vent should be secured better. The booster line sampling tap needs an atmospheric vacuum breaker to prevent cross-contamination. The moderate rating was derived from the wellhead being located outside of a 100-year floodplain and the well having a wellhead and surface seal which is considered to be maintained (after better securing the vent screen). A missing well log prevented determining if the highest production of the well comes from more than 100 feet below static water depths, and if the casing and annular seal extend into low permeability units.

The Lewiston Street Well rated high for construction. The well was constructed in 1974 to a depth of 350 feet below ground surface (bgs) with an 8-inch casing of unknown thickness. The 2001 Sanitary Survey noted that the wellhead has a proper vent and the static water depth at 170 feet bgs. The sanitary survey noted the well needed the following improvements: The chlorine room needs more ventilation to reduce the amount of oxidation on the pipes. The well seal needs to be inspected to be sure it is water tight. The sampling tap needs an atmospheric vacuum breaker to prevent cross contamination. Positively affecting the rating is the fact that the well is located outside of a 100 year floodplain. However, due to a missing well log and information on the 2001 Sanitary Survey, it is unknown if the highest production comes from more than 100 feet below static water depth, it is also unknown if the casing and annular seal extend into low permeability units. In addition, due to leaking water at the well seal, the wellhead is not considered to be maintained.

The Gooding Street Well rated high for construction. The well was constructed in 1951 to a depth of 300 feet bgs with a 12-inch casing of unknown thickness. The static water depth is at 160 feet bgs. The well has a proper vent. The well is located outside of a 100-year floodplain, and its wellhead and surface seal are maintained except for a missing sample tap. The high rating is due mostly due to missing information contained on the well log. Without a well log, it is unknown if the casings and annular seal extend into low permeability units, or if the highest production comes from more than 100 feet below static water depths.

The Monroc Well rated moderate for construction. The well was constructed in 1992 to a depth of 260 feet bgs and has an 8-inch casing of unknown thickness. The well is properly vented and the static water depth is at 147 feet bgs. The 2001 Sanitary Survey noted that this well is located near industrial facilities. In addition, at the time of the inspection, the well was not being used and the well was open to the atmosphere. The well is located outside of a 100-year floodplain. The high rating results from a missing well log which prevented determining if the casings and annular seals extend into low permeability units, or if the highest production comes from more than 100 feet below static water depth. Besides the open casing (which should be covered as soon as possible) due to the removed pump, the wellhead and surface seal appear to be maintained.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight inch diameter wells require a casing thickness of at least 0.322-inches and 12-inch wells should be 0.375 inches thick. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate. Each well received an additional point in the system construction category because it was unknown if the well meets current construction standards. Although the wells may have met standards when they were constructed, current regulations are stricter.

Potential Contaminant Source and Land Use

Each well rated moderate for IOCs (e.g. arsenic, nitrate), SOCs (e.g. pesticides), VOCs (e.g. petroleum products), and microbial contaminants (e.g. bacteria) except for the Lewiston St. Well which rated high for IOCs, VOCs, and SOCs. The potential contaminants associated with many of the agricultural and industrial businesses, the high percentage of agricultural land within the delineations, as well as the high county-wide nitrogen fertilizer use, Ag-chemical use, and herbicide use within the delineation contributed to the scores.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, the storage or application of any potential contaminants within 50 feet of the wellhead will lead to an automatic high score. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking.

Table 1. Summary of the City of Wendell Susceptibility Evaluation

Source	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Boise St. Well	H	M	M	M	M	H	H	H	H	H
Lewiston St. Well	H	H	H	H	M	H	H	H	H	H
Gooding St. Well	H	M	M	M	M	H	H	H	H	H
Monroc Well	H	M	M	M	M	M	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of total susceptibility, all four wells rated high for IOCs, VOCs, SOCs, and microbial contaminants. With the exception of the Monroc Well which rated moderate for system construction, each well rated high for hydrologic sensitivity and system construction. Each well rated moderate for IOC, VOC, SOC, and microbial Land Use scores, except the Lewiston St. Well which rated high for IOCs, VOCs, and SOCs.

No SOCs, VOC, or microbials have ever been detected in any of the wells. The IOCs nitrate, chromium, cyanide, fluoride, sodium, arsenic, barium, selenium, cadmium, and nickel have been detected in tested water, however concentrations of each have been significantly below MCLs. Despite existing in a region of high nitrogen fertilizer use, high herbicide use, and high ag-chemical use, nitrate has only been detected in concentrations less than 2 ppm, significantly below the MCL of 10 ppm.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). The City of Wendell, drinking water protection activities should first focus on maintaining the requirements of the sanitary survey. Any spills from the potential contaminant sources listed in Tables 2-5 of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. No chemicals should be stored or applied within the 50-foot radius of the wellhead. As most of the designated areas are outside the direct jurisdiction of the City of Wendell, partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineation, therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper mlharper@idahoruralwater.com Idaho Rural Water Association, at 1-208-343-7001 for assistance with drinking water protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Attachment A

Figure 2 – Figure 5

Table 2 – Table 5

Figure 3. City of Wendell Delineation Map and Potential Contaminant Source Locations

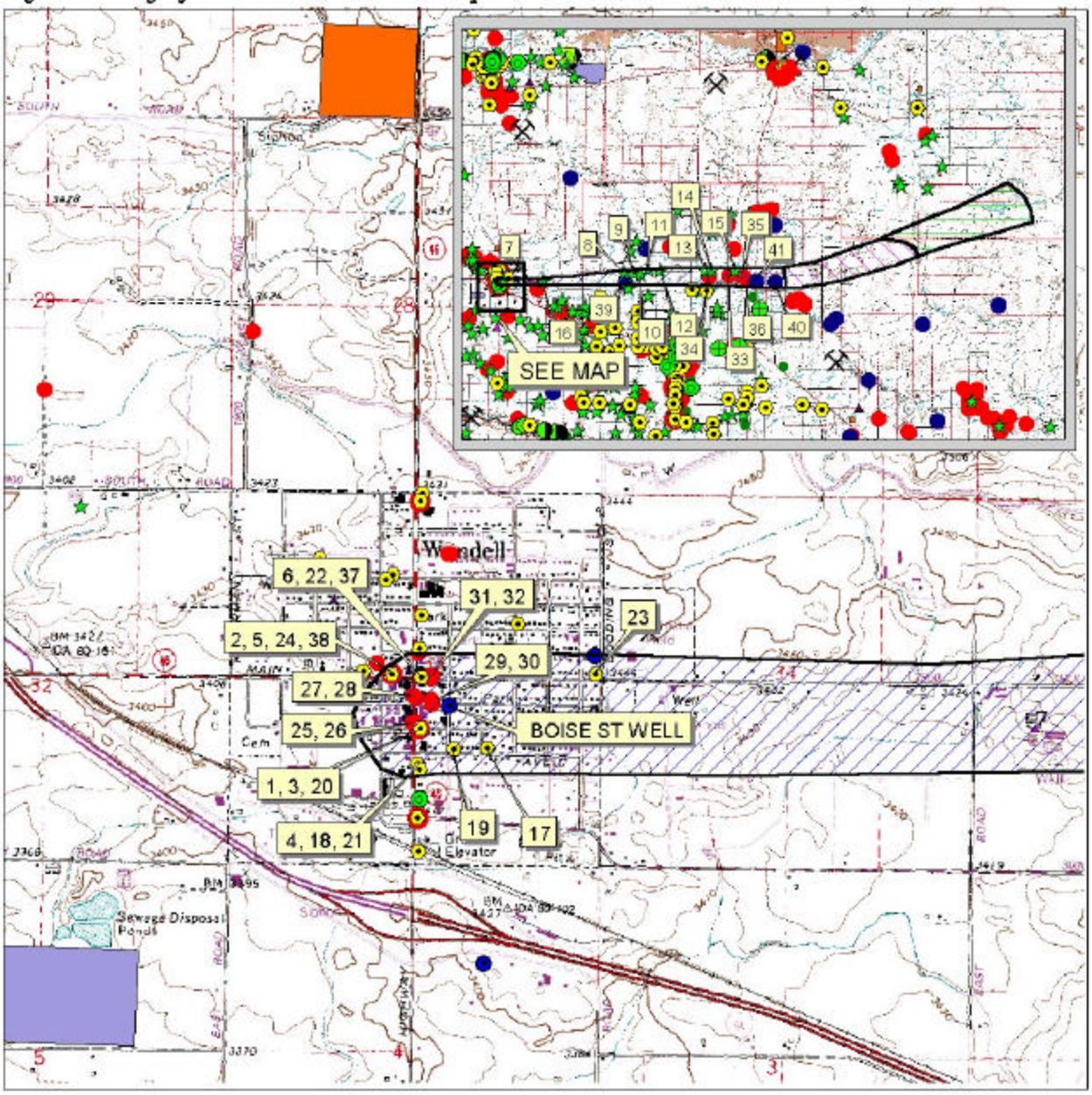


Table 2. City of Wendell, Boise St. Well, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1, 3, 20	Tire Dealer, LUST Site, UST Site	0-3 YR	Database Search	IOC, VOC, SOC
2, 5, 24, 38	Feed Dealer, LUST Site, UST Site, SARA Site	0-3 YR	Database Search	IOC, VOC, SOC, Microbials
4, 18, 21	Auto Parts & Service & Painting, UST Site	0-3 YR	Database Search	IOC, VOC, SOC
6, 22, 37	Motion Picture Equipment, UST Site, SARA Site	0-3 YR	Database Search	VOC, SOC
7	UST Site	0-3 YR	Database Search	VOC, SOC
8	Dairy 500-750 cows	0-3 YR	Database Search	IOC, SOC, Microbials
9	Dairy 750-1000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
10	Dairy 750-1000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
11	Dairy 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
12	Dairy 1000-2000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
13	Dairy 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
14	Dairy 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
15	Dairy 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
16	Dairy 500-750 cows	0-3 YR	Database Search	IOC, SOC, Microbials
17	Auto Repair and Service	0-3 YR	Database Search	IOC, VOC, SOC
19	Die Cutting (Manufacturer)	0-3 YR	Database Search	IOC, VOC, SOC
23	Feed Dealer (Wholesaler)	0-3 YR	Database Search	IOC, SOC, Microbials
25	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
26	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
27	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
28	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
29	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
30	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
31	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
32	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
33	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
34	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
35	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
36	Deep Injection Well, Active	0-3 YR	Database Search	IOC, SOC
39	Recharge Point, Active	0-3 YR	Database Search	IOC, SOC
40	Recharge Point, Unused	0-3 YR	Database Search	IOC, SOC
41	Recharge Point, Unused	0-3 YR	Database Search	IOC, SOC
	Highway 45	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial

[1] UST = Underground Storage Tank, AST = Above Ground Storage Tank, SARA = Superfund Amendments Reauthorization Act

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 5. City of Wendell Delineation Map and Potential Contaminant Source Locations

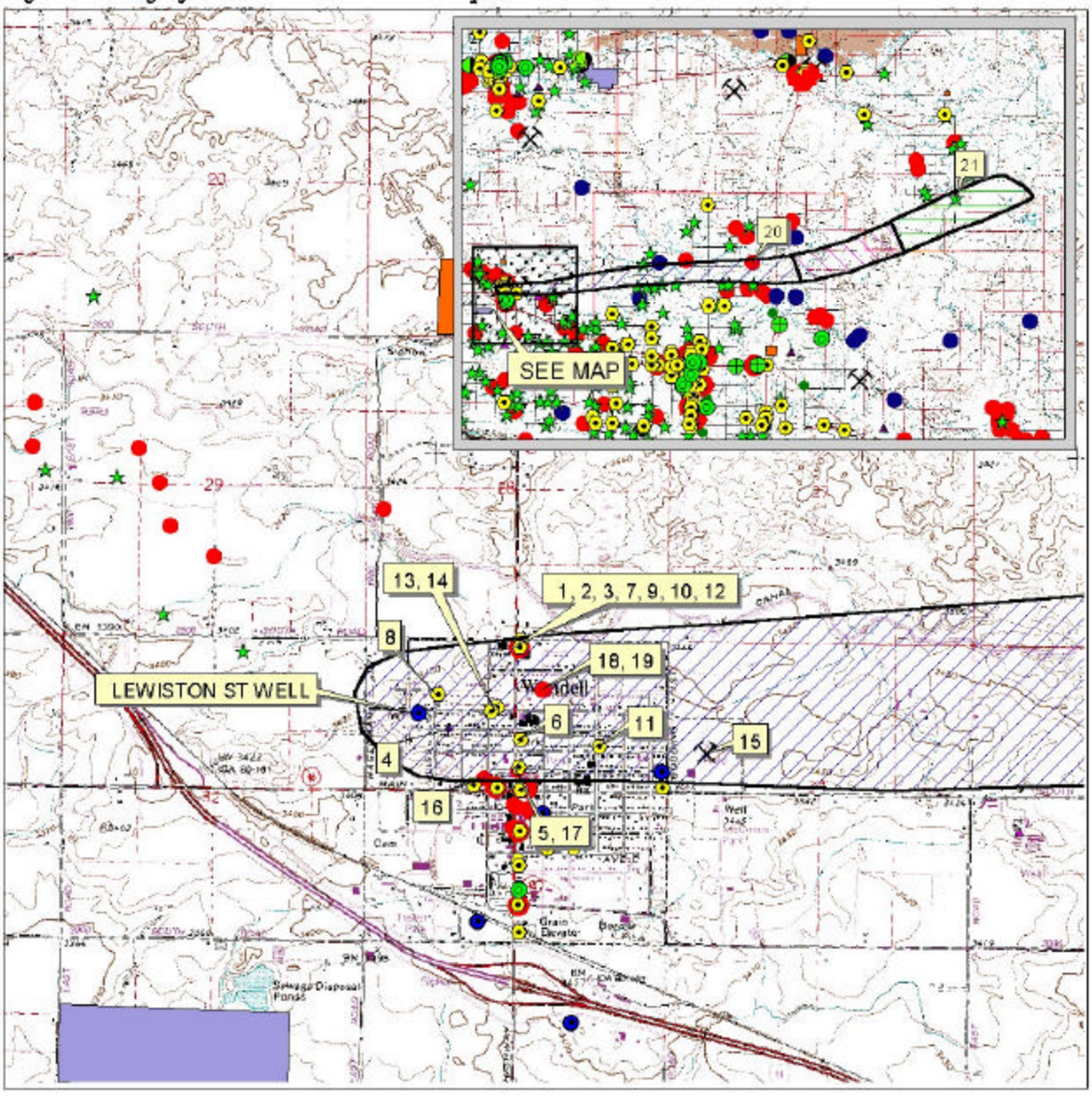


Table 3. City of Wendell, Lewiston St Well, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1,2,3,7,9, 10	UST Site, LUST Site	0-3 YR	Database Search	VOC, SOC
7, 9, 10	Veterinarians	0-3 YR	Database Search	IOC, SOC, Microbials
4	UST Site	0-3 YR	Database Search	VOC, SOC
5	Floor Laying, Refinishing	0-3 YR	Database Search	IOC, VOC, SOC
6	Recreational Vehicles	0-3 YR	Database Search	IOC, VOC, SOC
8	Tile/Ceramic Contractor	0-3 YR	Database Search	IOC, VOC, SOC
11	Lawn Mower Service	0-3 YR	Database Search	IOC, VOC, SOC
12	Trucking – Motor Freight	0-3 YR	Database Search	IOC, VOC, SOC
13	Automobile Parts	0-3 YR	Database Search	IOC, VOC, SOC
14	Agricultural Chemicals	0-3 YR	Database Search	IOC, VOC, SOC
15	Sand & Gravel Pit	0-3 YR	Database Search	IOC, VOC, SOC
16	Deep Injection Well, Active	0-3 YR	Database Search	IOC, VOC, SOC
17	Deep Injection Well, Active	0-3 YR	Database Search	IOC, VOC, SOC
18	Deep Injection Well, Active	0-3 YR	Database Search	IOC, VOC, SOC
19	Deep Injection Well, Active	0-3 YR	Database Search	IOC, VOC, SOC
20	Deep Injection Well, Active	0-3 YR	Database Search	IOC, VOC, SOC
21	Dairy, more than 200 cows	6-10 YR	Database Search	IOC, SOC, Microbial
	Highway 45	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial

[1] UST = Underground Storage Tank, LUST = Leaking Underground Storage Tank,
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 2. City of Wendell Delineation Map and Potential Contaminant Source Locations

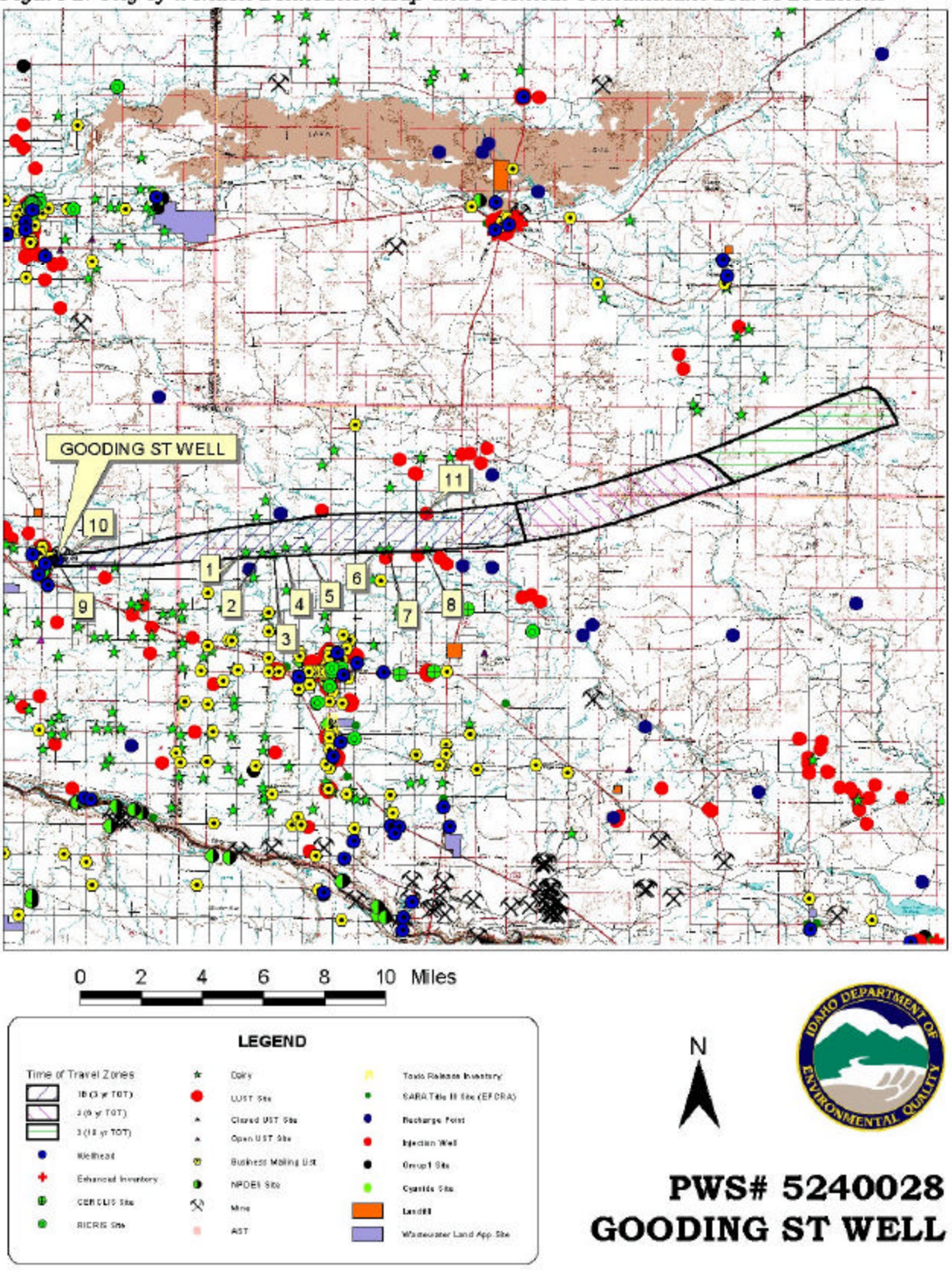
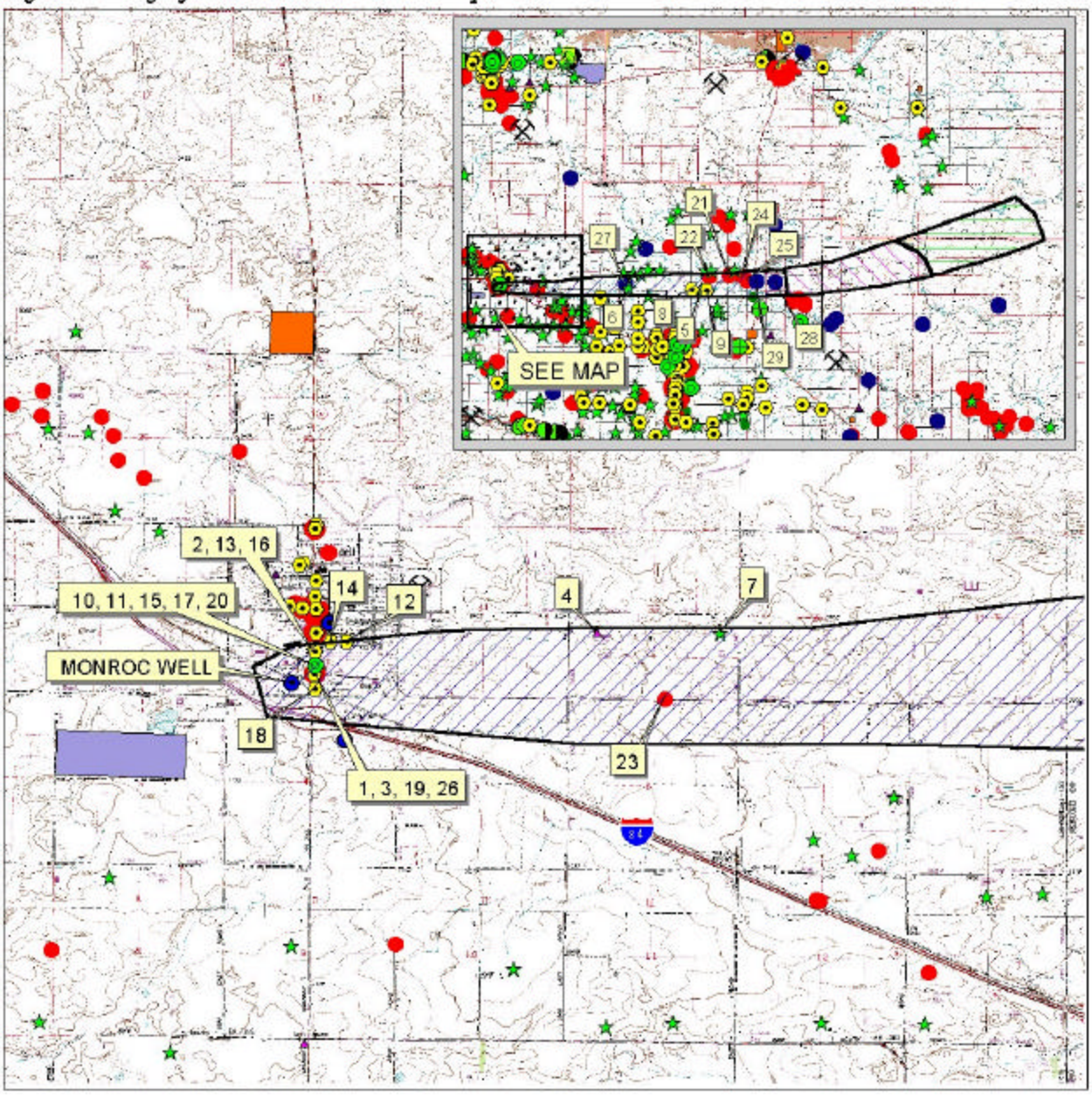


Table 4. City of Wendell, Gooding St Well, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1	Dairy; 500-750 cows	0-3 YR	Database Search	IOC, SOC, Microbials
2	Dairy; 750-1000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
3	Dairy; 750-1000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
4	Dairy; 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
5	Dairy; 1000-2000 cows	0-3 YR	Database Search	IOC, SOC, Microbials
6	Dairy; 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
7	Dairy; 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
8	Dairy; 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
9	Feed Dealers	0-3 YR	Database Search	IOC, SOC, Microbials
10	Sand and Gravel Pit	0-3 YR	Database Search	IOC, VOC, SOC
11	Deep Injection Well; active	0-3 YR	Database Search	IOC, SOC
	Highway 45	0-3 YR	GIS Map	IOC, VOC, SOC, Microbials

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 4. City of Wendell Delineation Map and Potential Contaminant Source Locations



0 1 2 3 Miles

LEGEND

Time of Travel Zones
1 (3 yr TOT)
2 (6 yr TOT)
3 (10 yr TOT)
Wellhead
Enhanced Inventory
CERCLIS Site
RICRIS Site
Dairy
LUST Site
Closed UST Site
Open UST Site
Business Mailing List
NPDES Site
Mine
AST
Toxic Release Inventory
SARA Title III Site (EPCRA)
Recharge Point
Injection Well
Group1 Site
Cyanide Site
Landfill
Wastewater Land App. Site

N

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 5240028
MONROC WELL

Table 5. City of Wendell, Monroc Well, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1, 3	UST Site, LUST Site	0-3 YR	Database Search	VOC, SOC
2, 16	Auto Body Repair, UST Site	0-3 YR	Database Search	IOC, VOC, SOC
4	UST Site	0-3 YR	Database Search	VOC, SOC
5	Dairy; less than 200 cows	0-3 YR	Database Search	IOC, SOC, Microbials
6	Dairy; 200-500 cows	0-3 YR	Database Search	IOC, SOC, Microbials
7	Dairy; 500-750 cows	0-3 YR	Database Search	IOC, SOC, Microbials
8	Plumbing, Drain, and Sewer cleaning	0-3 YR	Database Search	IOC, VOC, SOC, Microbials
9	Trucking, Heavy Hauling	0-3 YR	Database Search	IOC, VOC, SOC
10	Hardware, Retail	0-3 YR	Database Search	IOC, VOC, SOC
11	Well Drilling	0-3 YR	Database Search	IOC, VOC, SOC
12	Auto Repair and Service	0-3 YR	Database Search	IOC, VOC, SOC
13	Auto Parts and Supplies	0-3 YR	Database Search	IOC, VOC, SOC
14	Die Cutting	0-3 YR	Database Search	IOC, VOC, SOC
15	Welding Company	0-3 YR	Database Search	IOC, VOC, SOC
17	Truck Renting and Leasing	0-3 YR	Database Search	IOC, VOC, SOC
18	Grain Elevators	0-3 YR	Database Search	IOC, VOC, SOC
19, 20, 26	Fertilizer Wholesaler, SARA Site	0-3 YR	Database Search	IOC, VOC, SOC
21	Deep Injection Well; active	0-3 YR	Database Search	IOC, SOC
22	Deep Injection Well; active	0-3 YR	Database Search	IOC, SOC
23	Deep Injection Well; abandoned	0-3 YR	Database Search	IOC, SOC
24	Deep Injection Well; active	0-3 YR	Database Search	IOC, SOC
25	Deep Injection Well; active	0-3 YR	Database Search	IOC, SOC
27	Recharge Point	0-3 YR	Database Search	IOC, SOC
28	Recharge Point	0-3 YR	Database Search	IOC, SOC
29	Recharge Point	0-3 YR	Database Search	IOC, SOC
	Interstate 84	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial
	Highway 45	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial
	Union Pacific Railroad	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial

[1] UST = Underground Storage Tank, LUST = Leaking Underground Storage Tank, SARA = Superfund Amendments Reauthorization Act

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Attachment B

City of Wendell
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : WENDELL CITY OF Well# : BOISE ST WELL

Public Water System Number 5240028 03/13/2003 11:58:11 AM

1. System Construction		SCORE
Drill Date	1969	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	31	7	33	12
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	5	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		18	18	18	12
4. Final Susceptibility Source Score		15	15	15	15
5. Final Well Ranking		High	High	High	High

Ground Water Susceptibility Report Public Water System Name : WENDELL CITY OF Well# : LEWISTON ST WEL

Public Water System Number 5240028 03/13/2003 10:32:46 AM

1. System Construction		SCORE
Drill Date	1974	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	4	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	16	16	18	3
(Score = # Sources X 2) 8 Points Maximum		8	8	8	6
Sources of Class II or III leacheable contaminants or	YES	6	6	6	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	16	10
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		1	1	1	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		21	21	21	12
4. Final Susceptibility Source Score		15	15	15	15
5. Final Well Ranking		High	High	High	High

Ground Water Susceptibility Report Public Water System Name : WENDELL CITY OF Well# : BOISE ST WELL

Public Water System Number 5240028 03/13/2003 12:07:47 PM

1. System Construction		SCORE
Drill Date	1969	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	31	7	33	12
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	5	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		18	18	18	12
4. Final Susceptibility Source Score		15	15	15	15
5. Final Well Ranking		High	High	High	High

Ground Water Susceptibility Report Public Water System Name : WENDELL CITY OF Well# : MONROC WELL

Public Water System Number 5240028 03/13/2003 10:15:02 AM

1. System Construction		SCORE
Drill Date	1992	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	4

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	26	17	28	7
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	12	8	8	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		18	18	18	12
4. Final Susceptibility Source Score		14	14	14	14
5. Final Well Ranking		High	High	High	High